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16 May 1957

CMCC Doc. No. 151X5.565
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Dear Dick:

We are forwarding herewith eight copies of Monthly Progress Letter No. 10, covering work performed on System No. 4 during the period extending from 1 March to 10 May 1957.

Sincerely,

Burt
Burt

Enclosures:

CMCC Doc. No. 163X5.40
Copies 1-8 of 12

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Progress Letter No. 10
Contract No. A-101
System 4

1 March to 10 May 1957

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(This document contains a total of 5 sheets,
including this title sheet.)

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SECRET**1. General**

During the period covered by this progress letter, the following work was performed:

- (1) System and field tests were performed on the prototype model.
- (2) Fabrication and assembly of the first production model was essentially completed.
- (3) Unit and system tests were instituted on the first production model.
- (4) Assembly work was initiated on the second production model.

2. Prototype System

At the end of the last reporting period, engineering tests on the prototype equipment were completed. On 23 February 1957, the basic prototype system was shipped to the field. This system consisted of the receiving equipment for Bands II, VII, VIII, and IX, the audio/video programming equipment, the camera/indicator equipment, most of the antenna equipment, and the system power supply.

3. Flight-Testing of Prototype

- a. System flight tests were initiated at the test facility on 2 March 1957. During the period covered by this report, a total of seven system test flights were made.
- b. The first five tests, extending through 20 March 1957 were all relatively short in duration and were performed with partial system operation. These early tests indicated that modifications were required to produce effective lock-on of the receivers. (Modifications are described under paragraph 4, below.)

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c. On 22 March 1957, flight test number six was performed at operational altitudes for over six hours. About half of the system receivers and only the tape recorder were included, but this flight test served to demonstrate that the basic intercept sensitivities of the receivers included on the flight were acceptable. On 29 March 1957 a seventh flight, which included the same equipment as that included on the sixth test flight, was made and the results of the sixth flight tests were substantiated.

d. Since the aircraft was not available for system flight testing during the first two weeks of April 1957, this time was used to effect the system improvements indicated by previous system flight testing. In mid-April the project decided that since flight tests up to this point had partially served their purpose, system flight testing should be discontinued until system modifications were completed. Shortly after mid-April 1957, therefore, flight testing was stopped and the major engineering effort was directed toward completing a thorough system test of the first production model and incorporating suitable modifications.

4. System Modifications Indicated by Flight Testing

a. One of the principal deficiencies encountered during the flight tests was the susceptibility of the locking circuits to switching transients caused principally by the relay circuits. Steps have been taken to minimize the generation of these transients.

b. In addition, modification of the AGC-threshold units used [redacted] has been undertaken to provide more reliable threshold action and to minimize susceptibility to transient disturbances. The frequency response of all video circuits has been improved, and modifications to improve the performance of the video

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recording equipment are in progress. In particular, the high-voltage regulation has been greatly improved. This improvement was necessary because the indicator is sensitive to even a few volts change.

c. All system prototype equipment was delivered to the field during this period with the exception of the Band I receiving equipment which was in the process of engineering testing. A number of minor difficulties arose in the process of carrying out these tests. At the start of this work, most of the problems

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With the present design, either one of the channels can be used if the other is disabled.

5. Production

During this period the first production model of System 4 was approximately 95 percent completed. Fabrication of the antennas for Bands VIII through X, and for the Band I receiver remains. These items were not completed on schedule due to delays in parts delivery. Unit testing of all completed equipment of the first production model has been completed and over-all system testing is in progress.

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6. Planning

During the next reporting interval, the major effort will be directed toward:

- (1) completing system tests on the first production model, releasing this model for flight testing, and delivery for operational use
- (2) completing fabrication and assembly of the second production model.

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